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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/694,483

10/27/2003

Chunhong Hou

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12/13/2005

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EXAMINER

CHEN, TIANJIE

ART UNIT

PAPER NUMBER

2656

DATE MAILED: 12/13/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/694,483

Applicant(s)

HOU ET AL.

Examiner

Tianjie Chen

Art Unit

2656

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 November 2005.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) 3,5,8-13,17-21,26 and 27 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,4,5,7,14-16 and 22-25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

Non-Final Rejection

Election/Restrictions

1. Applicant's election without traverse of Species II with claims 1, 2, 4, 5, 7, 14-16, 22-25, and 27 in the reply filed on 11/03/2005 is acknowledged.

However, claim 27 recites "current leads positioned on a top and a bottom of the tri-layer reader stack such that magnetic field produced by a current passed through the current leads biases a magnetization of the first ferromagnetic layer substantially orthogonal to a magnetization of the second ferromagnetic layer;" which only reads on Species III drawn from Fig. 6, and does not read on Fig. 5, species II. Claim 27 cannot be elected and is withdrawn from consideration.

Drawings

2. Figures 1, 3a, and 3b should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

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A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1, 2, 4, 5, 7, 14-16, and 22-25, are rejected under 35 U.S.C. 102(e) as being anticipated by Applicant Admitted Prior Art (AAPA).

Claim 1, AAPA discloses a conventional magnetoresistive sensor (See Applicant's Figs. 1, 2a, and 2b and pp. 6-9) comprising: a tri-layer reader stack including a first ferromagnetic layer 12, a second ferromagnetic layer 16, and a magnetoresistive layer 14 positioned therebetween; and biasing means 22 (Fig. 3a; p. 7, lines 23-25) positioned with respect to the tri-layer reader stack for biasing a magnetization of the first ferromagnetic layer substantially orthogonal to a magnetization of the second ferromagnetic layer (Fig. 3a, p. 6, lines 24-26).

Claim 2, AAPA shows that nonmagnetic spacer means 24 (Fig. 3a; p. 8, lines 7-10) positioned between the tri-layer stack and the biasing means.

Claim 4, AAPA further shows that the magnetization of the first ferromagnetic layer is antiparallel to the magnetization of the second ferromagnetic layer in a quiescent state (Fig. 1; p.6, lines 9-10).

Claim 5, AAPA further shows that the quiescent state magnetization of the first and second ferromagnetic layers are antiparallel due to shape anisotropy (p. 6, lines 11-12).

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Claim 7, AAPA further shows that the magnetization of the first ferromagnetic layer and the magnetization of the second ferromagnetic layer rotate in response to flux emanated from a rotating disc (p. 6, line 25 to p. 7, line 3).

Claims 14 and 15, AAPA further shows that the magnetoresistive layer is a nonmagnetic metal/tunnel barrier (p. 6, lines 6-8).

Claim 16, as described above, AAPA discloses a magnetoresistive sensor having an air bearing surface for confronting a surface of a rotating disc comprising: a first ferromagnetic free layer; a second ferromagnetic free layer having a quiescent state magnetization substantially antiparallel to a quiescent state magnetization of the first ferromagnetic free layer; a magnetoresistive layer located between the first and second ferromagnetic free layers; and at least one biasing structure positioned with respect to the first and second ferromagnetic free layers to bias a magnetization of the first ferromagnetic free layer substantially orthogonal to a magnetization of the second ferromagnetic free layer.

Claim 22, as described above, AAPA shows that the magnetization of the first ferromagnetic free layer and the magnetization of the second ferromagnetic free layer rotate in response to flux emanated from the rotating disc.

Claims 23 and 24, as described above, APA shows that the magnetoresistive layer is a metal/tunnel barrier.

Claim 25, as described above, APA shows that the at least one biasing structure is separated from the first and second ferromagnetic free layers by a nonmagnetic spacer layer.

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Conclusion

4. The prior art made of record in PTO-892 Form and not relied upon is considered pertinent to applicant's disclosure.

Examiner's Notes

5. Applicant discusses a conventional device and some improvements in his invention to overcome the problems existing in the conventional device. However, none of the elected claims reflect the improvements, and in contrast all the claimed features can be found in the conventional device.

6. Examiner has noted that Applicant uses few terms, which is different with commonly used terms in the art. For example, "free layer" rather than the "spacer layer" is commonly recognized as "magnetoresistive layer;" and "quiescent state" is commonly referred to the state without the external magnetic field from the disk, not the state without the biasing means.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tianjie Chen whose telephone number is 571-272-7570. The examiner can normally be reached on 8:00-4:30, Mon-Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hoa Nguyen can be reached on 571-272-7579. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


TIANJIE CHEN
PRIMARY EXAMINER